Shropshire Botanical Society Newsletter

Autumn 2011

Shropshire Botanical Society Newsletter No.23

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The Shropshire Botanical Society website: http://www.bsbi.org.uk/shropshire.html
Past copies of the newsletter are available as pdfs from the website.

Any opinions expressed in this newsletter are those of the various authors, and are not necessarily those of the Society.

Front Cover photo: *Taxus baccata*, Yew (Dan Wrench)

Society Matters Mags Cousins

In my introduction to the last newsletter I wondered on the effect of the cold winter on our flora. This seems like ancient history after such a warm spring and the driest summer in many years in Shropshire. The drought changed the appearance of parts of our county but hopefully there will be plentiful rain this winter to recharge our wetlands.

In this newsletter we continue to our look at Shropshire's important wetland habitats. We have a summary of the upland flush survey of Hope Bowdler and Caer Caradoc carried out by specialists from Sheffield University.

We also have the first of two articles on the surprisingly varied and beautiful Gymnosperms, starting with the deciduous conifers. You might still have time to see some of these before they have shed all their needles for the winter.

There is always room for debate in conservation and the challenges laid out in the last edition's Top Ten Targets for Shropshire certainly stirred up some discussion. This has led to some robust responses and a constructive programme of works and monitoring on Earl's Hill.

Penny reports on this year's field meetings, if you didn't make it out there this summer the details of the 2012 programme will be in the Spring 2012 newsletter. Beginners are welcome to all meetings, in or out.

The Flora of Shrewsbury, 2011, Sarah Whild, Martin Godfrey and Alex Lockton, was published in May this year. It is available for £5 (incl. p & p) from Dr S.J. Whild, University of Birmingham, The Gateway, Chester Street, Shrewsbury, SY1 1NB. Please make cheques payable to 'Shropshire Botanical Society'. Society finances continue to be healthy and our new treasurer, Sue Townsend takes over from Mags Cousins with effect from December 2011.

Look forward to seeing you all at the forthcoming winter meeting, always a seasonal treat and a good social occasion:

Winter Meeting

SBS Winter Meeting Saturday 10th December 2011, 2-4 pm, at Preston Montford Field Studies Centre, Montford Bridge, Shrewsbury, SY4 1DX.

A social event with sherry, mincepies plus:

Who is the speaker ??????

Spring Meeting and AGM

Saturday 21st April 2012, 2-4 pm, at Preston Montford Field Studies Centre, Montford Bridge, Shrewsbury, SY4 1DX. A little bit of Shropshire Botanical Society business, plus a speaker to be confirmed.

Spring Course on Botanical Identification

Want to improve your Botanical Skill? Learn how to correctly identify the emerging spring flora?

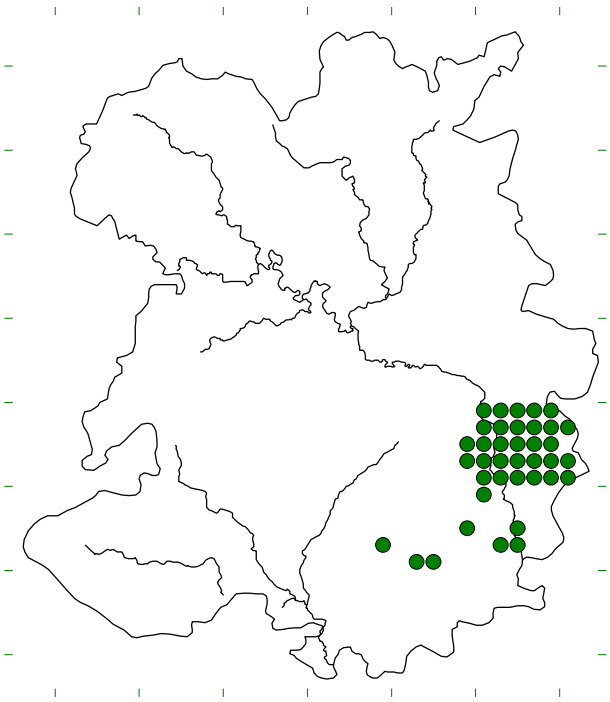
This is a practical course on botanical identification, using illustrated lectures, practical identification workshops and field work, which will allow amateurs and professionals alike a chance to gain confidence. Detailed study will be made of individual species, their particular characteristics and how they fit into their families. During this course you will have the opportunity to practice your plant identification skills using a range of identification books, getting to grips with 'Stace' along with 'Poland'. Along the way the seemingly mysterious terminology of botany will be explained and illustrated. Field excursions are planned to local sites as well as making use of the grounds of Preston Montford Field Centre.

The course will be held at Preston Montford Field Centre, running on Mondays from 10am-12pm or 2-4pm. Start date 13th February 2012 for 10 weeks.

For more details contact Mark Duffell tel: 01743 851084, or email: mark@duffell7.wanadoo.co.uk

Obituary: Joan Brown

Joan Brown was active in botanical recording between 1990 and 1999, having enthusiastically adopted the hectad SO79 for the planned tetrad survey of the county, which was later abandoned due to uneven coverage. She obviously enjoyed tetrad recording as during that time she made 5,048 records, almost entirely for that square. Her botanical knowledge was reasonably wide, with 546 species recorded (a good total for a 10 km square) and not many unconfirmed records to her name. Joan was mainly a wild flower enthusiast; she rather spurned grasses (4% of her records were of grasses) and sedges (just 20 records) in favour of the more showy species. Her enthusiasm for recording flowering plants in tetrads put her rather at odds with the more recent developments in the Botanical Society, and when tetrad cards came to an end she devoted her time to the Wildlife Trust's recording efforts instead. Even now, however, her work in SO79 often produces a noticeable square on the map where the area is more thoroughly recorded for, say, *Castanea sativa* (Sweet Chestnut) or *Sinapis arvensis* (Charlock) than any other part of the county.



Joan's botanical records in Shropshire

Joan was also involved in recording the Severn Valley Country Park in the early days of its establishment and with the Bridgnorth branch of Shropshire Wildlife Trust. She was passionate about trying to conserve special places which she knew well, one of them was the Bridgnorth Cemetery. She was delighted when work was carried out to control the Bracken that was recommended in the management plan. She wasn't afraid to take on talking to land owners or getting people involved that she thought might be useful and she would walk miles of lanes in pursuit of plants.

Joan died on May 30, 2011, peacefully in hospital at Shrewsbury in the presence of her loving family, aged 77 years. Fiona – is this correct?

County Recorder's Report for 2011

Sarah Whild and Alex Lockton

We have had a reduced level of recording in 2011, with the focus mainly on the tetrads with the fewest records since 1985, just to even up the survey effort. A new project is monitoring progress on conservation objectives, especially the ten targets outlined in the previous newsletter. A few significant new records have been made:

- John Bingham found a second plant of *Dryopteris oreades*, Mountain Male Fern, on the block scree at Titterstone Clee. This takes the number of known plants in the county to three, with the original one on Clee Hill and the one on Earl's Hill both still thriving this year.
- John Swindells found *Camelina microcarpa*, Lesser Gold-of-pleasure, near the Sharpstone Quarry extension at Bayston Hill, SJ496089, on 2nd June, This is a first county record and, according to the BSBI's Maps Scheme, the first British record for at least ten years.
- Steve and Elise O'Donnell found *Saururus cernuus,* Lizard-tail at Donnington Pool, Albrighton. This is not only a first county record but only the second record for Britain.
- Tim Rich found *Sorbus cuneifolia,* Llangollen Whitebeam at Jacob's Ladder and Blodwell Rocks. This is not only a first county record but also a first record for England for this (previously) Welsh endemic.
- Dan Wrench and Sue Swales found a new site for *Samolus valerandi*, Brookweed, at Bromfield Quarry, SO4876, on 13th June. There have only been four sites for it in the county since Sinker's Flora.
- Gentian Speedwell, *Veronica gentianoides*, was growing in abundance on waste ground in Chester St., Shrewsbury (SJ493131) on 27th May (Whild & Lockton). This is a first county record and possibly only the 4th British record.
- Lawn Lobelia, *Pratia angulata*, turned up in a second site, on a lawn in Albrighton (SJ814048) on 21st August (Whild & S.E. & E. O'Donnell). This alien plant, which grows mainly in lawns, does not seem to be spreading much in Britain.
- Dan Wrench spotted a plant of Cape Pondweed, *Aponogeton distachyos*, at Walford Pool. This is a first county record of an alien that does seem to be spreading rapidly, especially in SW England.
- It is good to be able to report that Field Garlic, *Allium oleraceum*, is thriving along Blakeway Hollow, thanks to scrub clearance and good management by the National Trust. This is the only known site for it in the county.
- Without doubt the most exciting find of the year was of *Juncus compressus*, Round-fruited Rush, on the banks of the Severn at The Heath, SO751826, by Brett Westwood and John Bingham, whilst boating down the river on 16th August. The site is close to one that was recorded in Leighton's Flora and where it was most recently seen by G.C. Druce in 1920. A nearby clump was just over the border in Staffordshire, where it is the first county record for well over 100 years. A specimen has been collected for confirmation.
- Recent research has shown that there are two Sea Club-rushes (*Bolboshoenus maritimus*) in Britain. The population at Preston Montford turns out to be the new one – *B. laticarpus* (F.J. Rumsey, conf. Z. Hroudová, 2011). Many inland populations may turn out to be of this species.
- Foxtail Barley, *Hordeum jubatum*, has a curious national distribution – it is widespread in most of England but strangely absent from the Marches. It has now turned up on a roadside on Titterstone Clee (SO587762, S.J. Whild, 20th August) and it might be worth looking for elsewhere.

Site management has been difficult this year due to the very dry weather. Wem Moss is looking splendid, having had most of its tree cover removed and paths mown to allow access to the whole site. The woodland remains around the edge – possibly this helps to protect the bog from spray drift and fertiliser runoff, but it must also suck a lot of water out of the peat. Unfortunately, the nicely-manicured heath was as dry as dust this year, and it was almost impossible to find even any round-leaved sundew, *Drosera rotundifolia*, let alone the rarities that used to grow there. A small amount of grazing has taken place by accident, when cattle crossed a dry ditch onto the bog. This is probably ideal – Wem Moss certainly used to be grazed by cattle and other bogs like Snipe Bog at Berrington still are. Cattle not only graze the vegetation in the right way, creating bare peat by pulling up clumps of vegetation, they also compact and poach the soil, making it more waterlogged and creating water-filled hollows. Our recommendation would definitely be to allow some cattle onto a restricted area of the moss and see what the effects are.

The Old River Bed in Shrewsbury, by contrast, has become wetter this year than previously. Where large areas of trees have been felled on the northern side of the swamp, the ground was so wet that it was dangerous to walk on it this year. Vast stands of *Calamagrostis canescens* grassland have appeared, some of which are floating mats. This type of vegetation is so unusual that it has no designation under the National Vegetation Classification, and it must be highly restricted in distribution. Congratulations are owed to Natural England and Shropshire Council for their work on this site.

Cramer Gutter sported a good crop of about 50 Marsh Gentian, *Gentiana pneumonanthe*, plants this year. Unfortunately, the site was as dry as dust, and the field is desperately under-grazed, with gorse bushes springing up everywhere and tree saplings taking over the exclosure where the gentians grow. It is a real dilemma for conservationists whether to protect flowering plants from grazing, or to let the livestock bite off the flowering spikes. At Cramer Gutter the balance is definitely wrong – the sward is now very close, and is being damaged by piles of cuttings where volunteers have cut hay by hand and dumped the cuttings on the SSSI heathland. The only thing to do is to take the exclosure fence down and reinstate agricultural management practices, including cutting and grazing. The danger with gentians is that the plants are long-lived: up to 20 years in many cases. This means that counting flowers does not give you advance warning of a population collapse. There were no seedlings in evidence this year.

Sarah Whild, BSBI Recorder for v.c. 40. S.J.Whild@bham.ac.uk

Hope Bowdler and Caer Caradoc Spring and Flush Vegetation

Tom Holland

Background

Using Environmental Stewardship and Natural England funds, eminent fen specialists from Sheffield University (Sue Shaw, Roger Meade, Phil Eades, Bryan Wheeler and Ros Tratt) were commissioned in 2010 to describe and map those fens and flushes that occur on Hope Bowdler and Caer Caradoc (subsequently referred to as HB/CC). The following is a summary of their findings.

HB/CC are situated roughly two kilometres to the east of Church Stretton, in Shropshire. The higher flanks of the hills support dense bracken and acid grassland. Within these areas are a number of small springs and seepages that arise on all flanks of the hill, mostly from relatively high altitudes, between 300–380 metres AOD. Some of these are clearly seasonal, with little associated wetland vegetation, while others appear to be perennial, and are accompanied by various types of wetland plant community. In some cases, wetland areas are small and discrete, and clearly associated with springs, while in other areas wetland vegetation is more extensive. The wetland soils were generally quite shallow, with at most 30 cm of peat over gravel or gravelly clays. Spring water was generally quite base-rich and fairly oligotrophic: pH of free-flowing spring water ranged from pH 6.7 - 7.6, and electrical conductivity from 130–300 µS/cm. Dissolved calcium concentrations were also moderately high, ranging from 40-45 mg / l^{-1}.

Vegetation

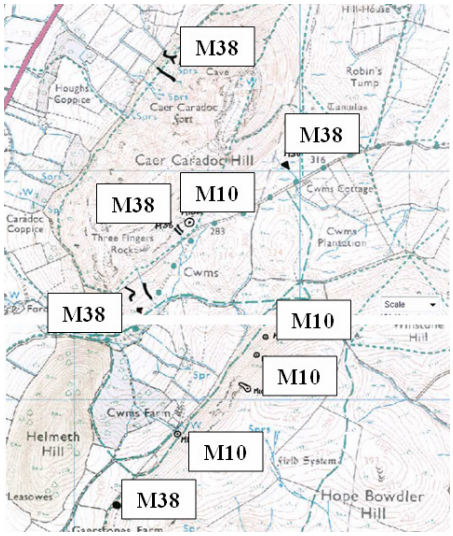
A number of wetland National Vegetation Classification (NVC) plant communities were identified. Three communities, associated with the springs and seepages, showed the greatest conservation interest and they were:

1. M10a *Carex dioica–Pinguicula vulgaris* mire, *Carex demissa–Juncus bulbosus/kochii* sub-community. Fifteen small examples were located - fourteen concentrated on the NW-facing slopes of Hope Bowdler and one species-poor example on the SE-facing slope of Caer Caradoc. See Map below. Most stands supported patches of *Pinguicula vulgaris,* Common Butterwort, and all were associated with open gravelly areas in and around base-rich springs and seepages, with all but one of these stands situated on steep slopes.

   Of the ten species that are crucial for defining the presence of M10, the HB examples contained seven species - five were ubiquitous within the flushes (*Pinguicula vulgaris,* carnation sedge *Carex panicea,* sharp-flowered rush *Juncus articulatus, Campylium stellatum* and *Scorpidium cossonii*) and two were scarce (*Bryum pseudotriqutrum* and *Aneura pinguis).*

   Deviation from the published NVC account is apparent from:
   - the low frequency of *Aneura pinguis, Bryum pseudotriquetrum,* tawny sedge *Carex hostiana*, tormentil *Potentilla erecta* and purple moor-grass *Molinia caerulea*;
   - the absence of the remaining three M10 constants: dioecious sedge *Carex dioica,* long-stalked yellow sedge *Carex viridula* subsp. *brachyrrhyncha* and lesser clubmoss *Selaginella selaginoides;*
   - the higher than expected constancy of marsh valerian *Valeriana dioica* and bog pimpernel *Anagallis tenella.*

The high frequency of common yellow sedge *Carex viridula* ssp *oedocarpa,* bulbous rush *Juncus bulbosus* and *Campylium stellatum* along with the low frequency or absence of long-stalked yellow sedge, glaucous sedge *Carex flacca* and *Bryum pseudotriquetrum* suggested the HB/CC flushes were most similar to M10a (the *Carex demissa – Juncus bulbosus* sub-community of the *Pinguicula vulgaris* and *Carex dioica* mire).



Map showing the distribution of M10 and M38 across HB/CC

M10 is a community of NW Britain and is one of the most calcicolous of our mires with the pH of the flushing waters usually within the range of 5.5 -7.0 and with large amounts of dissolved calcium (up to 100mg L^{-1}). M10a is at the less calcareous end of the M10 spectrum.

Plant communities such as M10 are best thought of as nodes on a scale of continuous variation, with some examples showing great similarity to a single NVC type, whilst others show similarities to two or even three plant communities, and can be thought of as intermediates. So the taxonomy of plant communities is analogous to that of plant species that hybridise freely, such as Rhododendron. And whilst the identification of sub-communities such as M10a often express some of these transitions, there is still plenty of scope for the occurrence of intermediates. Indeed a good example of this latter situation was identified by this survey: the sedge-rich vegetation, described below, that has affinities to M22, M13, M24 and M26.
A computer programme called MATCH was used to compare the list of plants recorded within the HB/CC plant communities with the published NVC accounts. MATCH produced a Similarity Coefficient which expressed the degree of similarity of the Hope Bowdler and Caer Caradoc plant communities to those described in the NVC.

Box A lists the species recorded within the homogenous vegetation encountered at the M10 base-rich spring-heads, along with its MATCH-derived similarity coefficients. These show that despite the deviations from the published accounts the HB/CC flushes are more similar to that community than any other. A 58% similarity coefficient to M10a is fairly strong.

Greater similarity to a particular NVC community does not necessarily imply greater conservation value. An intermediate between M10 and M13 could have as much or more conservation value as the most perfect example of M10.

Carex panicea	V	6
Campylium stellatum	V	3
Carex viridula ssp oedoca	V	5
Pinguicula vulgaris	IV	5
Juncus articulatus	IV	5
Juncus bulbosus	IV	3
Calliergon cuspidatum	IV	5
Pellia endiviifolia	IV	3
Drepanocladus revolvens	IV	7
Ctenidium molluscum	III	3
Eriophorum angustifolium	III	3
Carex echinata	III	5
Briza media	III	3
Valeriana dioica	III	3
Anagallis tenella	III	7
Cratoneuron commutatum fa	III	5
Bryum pseudotriquetrum	II	3
Succisa pratensis	II	2
Fissidens adianthoides	II	1
Anthoxanthum odoratum	II	2
Carex flacca	II	5
Ranunculus flammula	II	2
Cirsium palustre	II	2
Cardamine pratensis	II	3
Holcus lanatus	II	4
Galium palustre	II	2
Nardus stricta	II	3
Festuca rubra	II	2
Dicranella varia	II	3
Aneura pinguis	I	1
Carex hostiana	I	4
Potentilla erecta	I	1
Molinia caerulea	I	1
Cratoneuron commutatum	I	5
Cratoneuron filicinum	I	4
Eleocharis quinqueflora	I	4
Triglochin palustre	I	1
Prunella vulgaris	I	1
Equisetum palustre	I	3

The N.V.C subcommunities most close

1.	M10a	coefficient =	58.4
2.	M10	coefficient =	56.3
3.	M11	coefficient =	55.6
4.	M11a	coefficient =	52.2
5.	M10b	coefficient =	49.9
6.	M11b	coefficient =	49.5
7.	M 9a	coefficient =	45.5
8.	M13	coefficient =	44.5
9.	M 9	coefficient =	42.9
10.	M13b	coefficient =	41.6

Box A - List of species recorded in homogenous Pinguicula vegetation on Hope Bowdler and Caer Caradoc, with frequencies (I – V) and maximum cover values (expressed in Domin scores), along with MATCH-derived similarity coefficients showing the most similar NVC communities

2. A corresponding set of springs on Caer Caradoc supported vegetation attributable to the M38 *Cratoneuron commutatum – Carex nigra* spring community (rather than M10a). Species in the Caer Caradoc springs that gave the vegetation affinities to M38 included constant *Palustriella commutata,* common yellow sedge *Carex viridula ssp oedocarpa* (*Carex demissa*) and *Philonotis calcarea.* Species that also had an influence in giving the vegetation a similarity to M38 included cuckooflower *Cardamine pratensis,* common sedge *Carex nigra,* carnation sedge *Carex panicea,* autumn hawkbit *Leontodon autumnalis,* and white clover *Trifolium repens*.

3. A novel sedge-rich wetland plant community that appeared to be intermediate between several wetland plant communities: M24 *Molinia caerulea–Cirsium dissectum* fen meadow; M13 *Schoenus nigricans–Juncus subnodulosus* mire; M23 *Juncus effusus/acutiflorus–Galium palustre* rush pasture; M22 *Juncus subnodulosus–Cirsium palustre* fen meadow; and M26 *Molinia caerulea–Crepis paludosa* mire. This community appears to be associated with the stands of M10 and M38 and irrigated by similar base-rich seepages.

It is characterised by a low-growing, sedge-rich grassy vegetation with an abundance of small sedge species such as star sedge *Carex echinata,* glaucous sedge, tawny sedge, common sedge *C. nigra,* carnation sedge, flea sedge *C. pulicaris*, and common yellow sedge, mixed with frequent bog pimpernel, sweet vernal grass *Anthoxanthum odoratum*, quaking grass *Briza media, Calliergonella cuspidata,* marsh thistle *Cirsium palustre,* Yorkshire fog *Holcus lanatus,* marsh pennywort *Hydrocotyle vulgaris*, sharp-flowered rush, bulbous rush, soft rush *J. effusus*, self heal *Prunella vulgaris,* devil's bit scabious *Succisa pratensis* and marsh valerian. Other occasional species include scattered bryophytes such as *Brachythecium rutabulum*, *Campylium stellatum, Climacium dendroides, Cratoneuron filicinum, Palustriella falcata*, *Pseudoscleropodium purum, Rhytidiadelphus squarrosus* and *Thuidium tamariscinum*, plus occasional records for species such as sneezewort *Achillea ptarmica,* wild angelica *Angelica sylvestris,* heath grass *Danthonia decumbens,* meadowsweer *Filipendula ulmaria,* compact rush *Juncus conglomeratus,* fen bedstraw *Galium uliginosum,* fairy flax *Linum catharticum,* ragged robin *Lychnis flos-cuculi*, lousewort *Pedicularis sylvatica,* skullcap *Scutellaria minor* and marsh arrowgrass *Triglochin palustre*.

Other wetland communities included relatively extensive areas of M23b *Juncus effusus–Galium palustre* rush pasture along with smaller areas of M6 *Carex echinata – Sphagnum recurvum/auriculatum* mire, M25 *Molinia caerulea–Potentilla erecta* mire and M35 *Ranunculus omiophyllus–Montia fontana* rill. (The acidic nature of these other more extensive communities point to their different water supply: whereas the M10, M38 and M22/M24/M26 are fed by base-rich ground-water, the areas of M23 are fed by rain-generated surface run-off.)

Geology & eco-hydrology

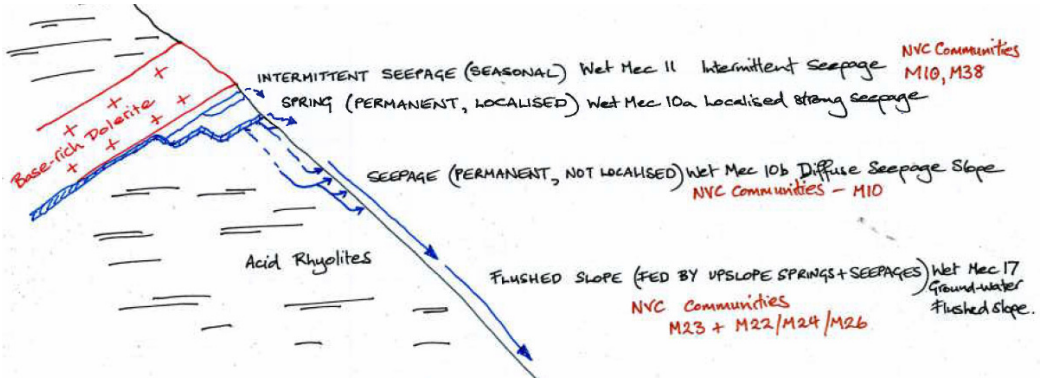
The rocks that give rise to the present-day hills of HB/CC are primarily of volcanic origin, a part of the Uriconian Volcanic chain stretching south-westwards from the Wrekin to Wart Hill, along the line of the Church Stretton fault zone. This material includes rhyolites (acidic in nature), andesites and basalts (basic in nature), together with tuffs and some intruded dolerite (also basic in nature), and has produced a very complex mapped geology on the hills. Most of HB/CC are covered with freely-draining, stony, loamy acid brown earth soils, with some more poorly-drained surface-water gley soils over the Drift deposits.

Numerous small springs are mapped, and are visible, across HB/CC and groundwater (as opposed to surface water) outflows are undoubtedly critical to the seepages and flushes that occur here. These groundwater outflows appear to be sourced from 'Solid' rocks, probably mostly from the Uriconian Volcanics. It seems very likely that all of the rocks of the Caradoc hills have a low primary permeability and that groundwater reaches the surface via faults, bed boundaries and other fractures. A large proportion of the springs, seepages and flushes examined here appear to be distributed along the mapped lines of bed boundaries and faults, although this does not apply to all examples. It is not known to what degree this observation is circular, in that geologists may have considered the runnels to indicate faulting rather than based it on a more empirical geological set of observations.

Generally, the dominant rocks underlying the soils of HB/CC are acidic rhyolites. The generally acidic nature of the soils on HB/CC is demonstrated by the dominance of bracken and acidic grasslands over most of the hill. It is therefore interesting that water from springs and seepages was moderately base-rich (pH 6.7–7.6). From the known petrology of the

Uriconian Volcanics, it may be reasonable to suspect that water draining from the dolerites and basalts, and perhaps andesites, may be somewhat more calcium-rich than outflows from the rhyolites and tuffs. Speculatively, it is inferred that the springs, which emerge from the acidic rhyolites must be picking up calcium, magnesium and other bases from base-rich volcanic or igneous rocks (such as dolerite, basalt or to a lesser extent andesite) from deeper strata or intrusions. On HB/CC the more base-rich outflows, some with *Pinguicula vulgaris*, have been recorded from the vicinity of faults immediately below outcrops of Dolerite (base-rich igneous rock) or from within Rhyolites and Conglomerates that have been intruded with Dolerite.

Recently the water supply mechanisms (e.g. springs, seepages, ground-water, surface-water) that underlie fens and marshes in England and Wales have been classified into twenty types, referred to as Wetland Mechanism or WetMecs (A Wetland Framework for Impact Assessment at Statutory Sites in England and Wales, Wheeler and Shaw for the Environment Agency 2010). This should help conservation organisations to know what sort of water regime (e.g. in terms of below ground water level, pH, fertility, flow characteristics) should be in place to conserve a particular wetland site. Using this system it is possible to identify the WetMecs that underlie the M10, M38 and M22/24/26 on HB/CC. Generally, the areas of M10 and M38 are underlain by WETMEC 10a (localised strong seepages), WETMEC 10b (Intermittent seepage) and WETMEC 11 (Intermittent seepage). The waters from these seepages flow downslope giving rise to areas of M22/M24/M26 and M23 (and the WETMEC underlying these flushed areas is WETMEC 17, ground-water flushed slope). The schematic diagram below attempts to explain these differences.


Base-rich Dolerite
INTERMITTENT SEEPAGE (SEASONAL) Wet Mec 11 Intermittent Seepage
NVC Communities
M10, M38
SPRING (PERMANENT, LOCALISED) Wet Mec 10a Localised strong seepage
SEEPAGE (PERMANENT, NOT LOCALISED) Wet Mec 10b Diffuse Seepage Slope
NVC Communities – M10
Acid Rhyolites
FLUSHED SLOPE (FED BY UPSLOPE SPRINGS + SEEPAGES) Wet Mec 17
Ground-water Flushed Slope.
NVC Communities
M23 + M22/M24/M26

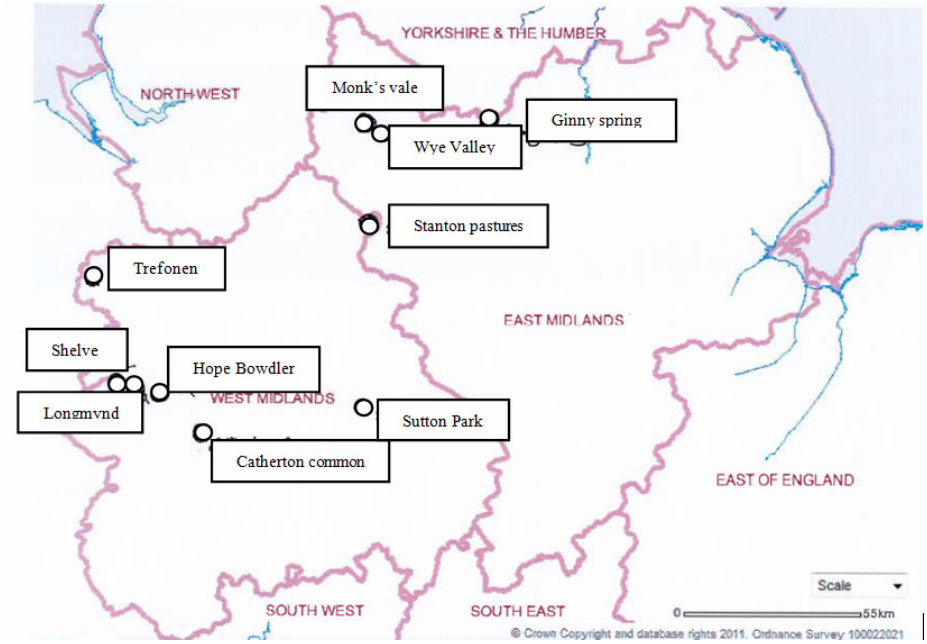
Conservation Evaluation

These springs and flushes are all small-scale features and cover far less than 1% of the hills' area. For example on Hope Bowdler, the combined area of the M10, M38 and M22/M24/M26 totalled 0.5ha on a hill with an area of 140ha. The M10 spring mounds had an average diameter of about 8m.

Despite their small area, the presence of M10 and M38 (and probably the novel M22/M24/M26 intermediate) qualify HB/CC for consideration as a SSSI. These plant communities are qualifying features all over the UK but their scarcity in the midlands should give them even more conservation interest here than in upland areas, where they are relatively common.

The historic distribution of *Pinguicula* (Atlas of the British Flora, 2002) suggests that before widespread 19th century drainage and 20th century agricultural intensification, the distribution of M10 and M13 was limited only by suitable geology and high altitude. However, as with many habitats and species that depend on nutrient-poor, unimproved conditions, both

communities have been decimated in the lowlands, and now survive almost entirely as a communities of the uplands. And so in the midlands *Pinguicula* and M10 only occur at a handful of sites (probably ten or fewer) along the upland fringes of Shropshire, Staffordshire and Derbyshire. Most of these sites are designated as SSSIs. Are there any other sites in the midlands that contain M10 and *Pinguicula* that are not designated as SSSIs?



Map showing the likely distribution of *Pinguicula vulgaris* in the midlands 2011

Conservation Management

The existing land management appears to be maintaining the wetland habitats in good condition. The springs do not appear to be drained and there are no signs of water abstraction. Sheep grazing (as more or less as practised at present) is probably preventing scrub encroachment across the wetland sites. There were no indications of the addition of fertilisers to any part of the hillsides; again the steep slopes probably preclude any such activity. It is important that the situation remains one of low nutrient loading, since water flow pathways are difficult to predict in such convoluted geology, and it is possible that soil enrichment could influence spring water quality at some distance from the source. None of the wetlands showed signs of bracken encroachment.

Deciduous Conifers

Ruth Dawes

The conifer families *Pinaceae* and *Cupressaceae* both have species which change leaf colour and shed their needles in autumn in contrast to most of the other gymnosperms.

Larch Species (*Larix* species) – *Pinaceae* (Pine family)

Larix decidua (European Larch) and *Larix kaempferi* (Japanese Larch), plus their hybrid, *Larix x marschlinsii* have all been commonly planted in the British Isles and can naturalise. European Larch was introduced here from central Europe and was an important commercial tree by the late 1700s, used for boat building, shelterbelts and game coverts.
Japanese Larch was introduced much later, around 1900, from the mountains of Japan, but quickly replaced European Larch in areas of poor soil because it grew faster on poorer ground.The hybrid between the two was first noticed on the Duke of Atholl's estates at Dunkeld in Perthshire in 1904. With typical hybrid vigour, it was discovered to grow faster than either of the parents, particularly on poorer, higher ground. The best seed was found to be from grafted plants of superior trees of the parents grown in "seed orchards." Larch leaves are borne singly on new shoots and in short dense clusters on the older wood. The bright lime green of the new leaves in spring and gold then orange-brown foliage in autumn make the larches easy to spot in their widespread locations.

Taxodium distichum (Swamp Cypress) – *Cupressaceae* (Juniper family)

Swamp cypress (or Bald cypress) is native to the south eastern United States, where it grows in flooding riverside swamps, acquiring its classic woody "knees." However, hot summers are more important to this species than wet roots. In the UK it has been planted in parks, gardens and arboretums. The leaves have the appearance of being alternate and turn orange-brown in autumn.

Metasequoia glyptostroboides (Dawn Redwood) – *Cupressaceae* (Juniper family)

Classed as a living fossil, this sole living species in the genus *Metasequoia*, belongs to the redwoods and is native to China, where it is was rediscovered in the 1940s. It is a rare and endangered species on its home ground, but has become a popular ornamental tree in parks and gardens worldwide after seeds were collected for cultivation. It has proved easy to grow in temperate regions and is hardy down to very low temperatures. Older specimens can form wide buttresses on the lower trunk. The leaves appear opposite and turn foxy red-brown in autumn.
Both Swamp Cypress and Dawn Redwood, (together with Coastal and Giant Redwood), were previously included in *Taxodiaceae* (Redwood family), but have all been transferred to *Cupressaceae* (Juniper family) due to DNA analysis.

Ginkgo biloba (Maidenhair Tree) – *Ginkgoaceae* (Ginkgo family)
Just to clarify, another living fossil with deciduous leaves, native to China, but this species is classed as nearest to the cycads. Ginkgo shares features and strategies for survival with other pre-angiosperms. The distinctive bi-lobed leaves turn golden yellow in autumn. It is widely planted.
Swamp Cypress, Dawn Redwood and Ginkgo can all be seen in the Dingle part of the Quarry, Shrewsbury.

Shropshire's Top Ten Target Sites – A Response

Jan McKelvey and Fiona Gomersall, Shropshire Wildlife Trust

Shropshire Wildlife Trust would like to respond to Alex Lockton's Top Ten Shropshire sites with the following comments since we disagree with his analysis of some of the Trust reserves which were included:

Target 3 Wem Moss

It was the best lowland raised bog in the county according to Charles Sinker, but this was in 1962! Several of the species listed are still present on the site including 12 of the 13 species of *Sphagnum* moss, *Drosera rotundifolia*, Round-leaved Sundew, *Andromeda polifolia*, Bog Rosemary and *Rhynchospora alba*, White- beaked Sedge - all recorded this year when the condition assessment surveys were carried out. Only 5ha of the site are wooded, the remainder 23 ha is fairly open, so the site is not 'largely wooded' by any stretch of the imagination and if only it was the simplistic solution to cut down all the trees - which we have done for the past 10 years!

It is correct that the bog is still too dry though. Despite installing 500m plastic sheet piling along the border drain and raising the water levels year round in the southern boundary ditch the site is still not re-wetting as rapidly as we would expect. We are questioning some of the original assumptions about where the water is leaving the site and re-examining data about abstraction licences. We would like to put another sluice in on the border drain but are falling foul of the Land Drainage Act 1991 and meeting resistance to this idea from many quarters! A new Higher Level Stewardship (HLS) scheme has been submitted which includes experimental grazing, but with sheep, not cattle as they are not recommended for grazing such sensitive sites. Finally, we do measure success (or lack of it!) by mapping the NVC community M18.

Target 4 Earl's Hill

Geranium sanguineum, Bloody Cranesbill, *Ophioglossum vulgatum*, Adder's- tongue fern and *Hygrocybe calyptriformis*, Pink Waxcap and are all still present at Earls Hill and the site is managed predominantly for the upland acid grassland and broadleaved woodland for which it is designated an SSSI. We have to prioritise our management efforts but it was a little' rich' to state that the site has experienced "decades of neglect". However we'll let that pass! It has been a struggle to persuade the grazier to put his sheep on the hill and keep them there due to regular incidents of sheep worrying and savaging by dogs. The "dreary hawthorn scrub" is home to dormice - a protected species and so we can't very easily just, "cut back the scrub".

We are happy however, to re-think the management of the scree area and since the original article was written have had a site visit with Alex *(see following article Mesotrophic Grassland Restoration at Earl's Hill)* who made some useful comments and searched himself for the *Sedum forsterianum*, Rock Stonecrop which is flourishing!

Target 6 Prees Branch

Evidence suggests the whole canal arm from the Llangollen Canal down to Waterloo Bridge was rich in macrophytes in the 1970's. However it was made an SSSI at the same time the

marina was constructed in 1975, so only the length that was left once the sheet piling was put in,was designated a nature reserve - about a third of the original length.

We are not sure on what basis Alex has made the comment that, “the Wildlife Trust is not equipped to manage the canal" and the "canal people do not want anything to do with it..." It is simply not true and it is hard not to feel that, "none of the organizations involved are being criticized" as Alex has put in his introduction. There is absolutely no chance that boats with propellers could use the nature reserve on account of the sheet piling by the marina, and we’re sorry to say that it's a pipe dream to think that boats tugged by horses would be the answer, however lovely an image may be conjured up.

Half of the canal was dredged in 2006 and the second section is being costed out, to be dredged in the next couple of years- funds permitting. The curious thing about Prees Branch Canal is that the construction of the marina and changes to the water regime since that time coincide with the decline in the plant species mentioned by Alex.

Target 10 Cramer Gutter

We are not sure when Alex last visited Cramer Gutter, but it is not drying out or scrubbing over! In fact it is fine fettle! The *Gentiana pneumonanthe*, Marsh Gentian, although fluctuating cyclically is thriving. We will carry out hedgelaying when the site is submitted into HLS in two years time, but it is unlikely that the mature hedges are sucking water out of the site at such a rate that there is an urgency to bring the work forward.

We are also very surprised at the suggestion that the pond should be removed, "Perhaps the most obvious action would be to recreate the high water table in the pond." Whild Associates, October 2001.

The pond was restored in 2003, and now is inhabited by *Triturus cristatus*, Great- crested Newts, so we are afraid that we cannot remove it to create a muddy watering hole instead!

SSSIs and HLS Monitoring in Natural England

Frances McCullagh

Natural England funds a programme of integrated monitoring that is designed to enable reporting on a variety of outcomes. At a national level, this includes projects with co-ordinated sampling designed to report on overall trends, and where appropriate the outputs are published in reports and scientific papers. However a greater emphasis is also being placed on monitoring at the local scale with the introduction of an Integrated Site Assessment (ISA) system. This aims to be a single co-ordinated programme of monitoring visits that are carried out by Natural England staff on land that is a Site of Special Scientific Interest and/or in a Higher Level Stewardship agreement. The 'integrated' element is intended to secure efficiencies by joining up and replacing the separate programmes for monitoring SSSI features (based on Common Standards Monitoring) and HLS agreements (Indicators of Success Assessments), whilst maintaining the robustness of the evidence base. Common Standards Monitoring guidance continues to underpin the ISA approach.

All HLS agreements include Indicators of Success which set the targets that each management option is hoping to achieve and against which success will be compared. For really good sites this may be to maintain the status quo but for restoration sites more ambitious targets should be set. It must be remembered that monitoring addresses the key features being managed. This is not always botanical interest as sites will be managed for a variety of reasons including target species, historic environment or access. The targets for SSSI features are defined within favourable conservation tables, which are produced for each site and take account of the features for which the site is designated. ISAs gather information on the condition and management of SSSI features and HLS performance. All SSSI units will be visited on a rolling programme and all HLS agreements will have an ISA at least once during the 10 year life of the agreement. The interval for ISAs on SSSIs will no longer be fixed at six yearsbut will vary with the sensitivity of the features being monitored and the risks to their condition (up to a maximum of nine years for very low risk sites). Two different approaches (rapid or detailed) will be used depending on the nature of the site and/or the reason for the assessment, but both are built on common standards principles; it is the extent of data physically recorded that varies. A proportion of Detailed Site Assessments will be determined nationally as part of a thematic programme.

Information about the condition of SSSIs is stored on the ENSIS computer system and this information is already publicly available via the Natural England website http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm

Part of the intention of reviewing the whole monitoring system has been to look at improving the consistency of how the organisation gathers, stores and shares data. A database to store and share data collected through Integrated Site Assessments is being developed. There is undoubtedly room for improvement, perhaps particularly in the way that Natural England communicates with local partners and interest groups. Natural England like many public bodies has been affected by funding cuts and needs to reduce the use of contractors for monitoring. The use of local teams to deliver ISAs where they have the skills is one element, but Natural England will also be hoping to work more closely with voluntary organisations. If anyone would like to know more about the monitoring programme in Shropshire feel free to contact me, Frances.mccullagh@naturalengland.org.uk.

Mesotrophic Grassland Restoration at Earl's Hill

Alex Lockton, Carl Pickup & Jan McKelvey

Summary

1. **Rationale**. Earl's Hill is one of the most important sites in Shropshire for biodiversity, measured using plants as a proxy for all taxa. For a site that is not on limestone, it is exceptional, with 104 species of axiophyte recorded since 1950.

2. **The problem**. There are three main habitat types at Earl's Hill: acid grassland on the western slopes and summit; ancient woodland in the valley; and mesotrophic grassland on the eastern slopes. The first two habitats are stable and well-managed, and their axiophyte complement has increased in recent decades. The mesotrophic grassland, however, has been inaccessible for management and grazing, and it has scrubbed over to a considerable degree, resulting in the decline and loss of several species of axiophyte, including species for which the site is designated a SSSI. Other fields of mesotrophic grassland which were outside the reserve have been damaged by agricultural intensification.

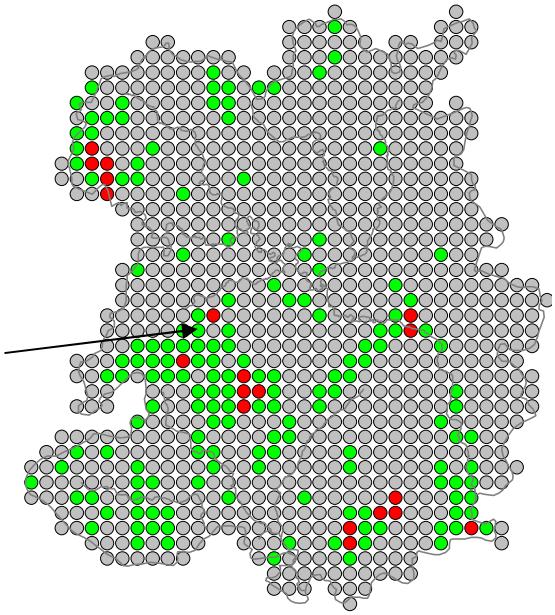


Figure 1: axiophyte richness of tetrads in Shropshire. Red dotes are for areas with over 100 species. Green dots are those with more than 50. Earl's Hill is marked with an arrow.

3. **The proposed solution**. Now that Shropshire Wildlife Trust owns the adjacent fields it is easier to reconnect the grassland parcels and restore it all to conservation management. Areas of scrub within the reserve can be cleared and fenced to facilitate grazing. By progressively encroaching onto the scrub from the fields, the grassland area can be encouraged to expand into areas that are currently degraded.

4. **Anticipated outcome**. Initially, we need to demonstrate successful conversion of scrub to species-rich mesotrophic grassland. A small area of scrub will be cleared at first and then monitored for progress. If successful, the exercise can be extended to all areas which were formerly grassland and where grassland relic species still occur in the ground flora. This includes most of the land above the main path through the reserve and some areas below the path. Progress will be measured with quadrats and photography.

5. **What we hope to learn**. The mesotrophic grasslands are notable for the presence of hills made by the yellow meadow ant, *Lasius flavus*. These anthills can be seen in a degraded state on the edge of the scrub and on the edges of the partially improved agricultural fields. There are few if any anthills in the secondary woodland, under bracken or in the more improved fields (although it would be useful to quantify this). The rate of regeneration of these anthill grasslands will be studied, as will the recolonisation by axiophytes of mesotrophic grassland.

Introduction

Nature conservation is all about priorities. It is about deciding that *this* species, or *that* habitat or *those* ecosystem functions are rare, threatened, declining or special and therefore need to be protected. We cannot have more of everything. If species A is to be protected, species B might have to be culled. If a site is to be woodland, then it cannot also be grassland. Conservation management must therefore always take into account the 'bigger picture' and it must be justifiable at all scales.
In this report we propose that the mesotrophic grassland at Earl's Hill needs to be restored; we provide evidence that it is a habitat of the highest value and that it will decline in quality if action is not taken; and we also provide a realistic plan for its restoration in an affordable way and with measurable targets.

The conservation value of Earl's Hill

Earl's Hill has is a large and diverse site that has been managed as a nature reserve since the early 1960s. When it was first acquired by Shropshire Wildlife Trust there was a considerable amount of scrub on the summit, and this was cleared by burning, followed by grazing. Since then the western side and the summit have been successfully maintained as acid grassland in favourable condition.
In the Habberley valley there is ancient woodland which is also of high conservation interest, being W8 *Fraxinus excelsior* woodland with incipient W7 *Alnus glutinosa* woodland on the banks of the brook. Of particular interest is the presence of Upland Enchanter's-nightshade, *Circaea x intermedia*, which is considered a relic of early postglacial conditions.
On the eastern slopes of the hill there is – or was – mesotrophic grassland, characterised by the presence of anthills of the Yellow Meadow Ant, *Lasius flavus*. There is also boulder scree, which is part of the grassland vegetation. On the scree is one of the two known plants of Mountain Male-fern in Shropshire – another upland plant on the very edge of its range. It is because these habitats are on the retreating edge of their range that they are so vulnerable. If lost, these species and habitats cannot be recreated in this part of the country until the next ice age comes, so their conservation is particularly important. It could, of course, be argued that there is no point in resisting climate change; but the habitat that has increased at the expense of the grassland is hawthorn scrub, which is very common in lowland England and which can easily be created almost anywhere by simply fencing off any area of grassland or bare ground.
The grassland and scree at Earl's Hill is characterised by the axiophytes listed in table 1.

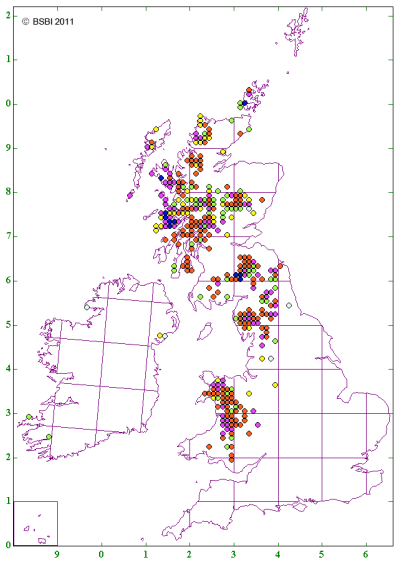


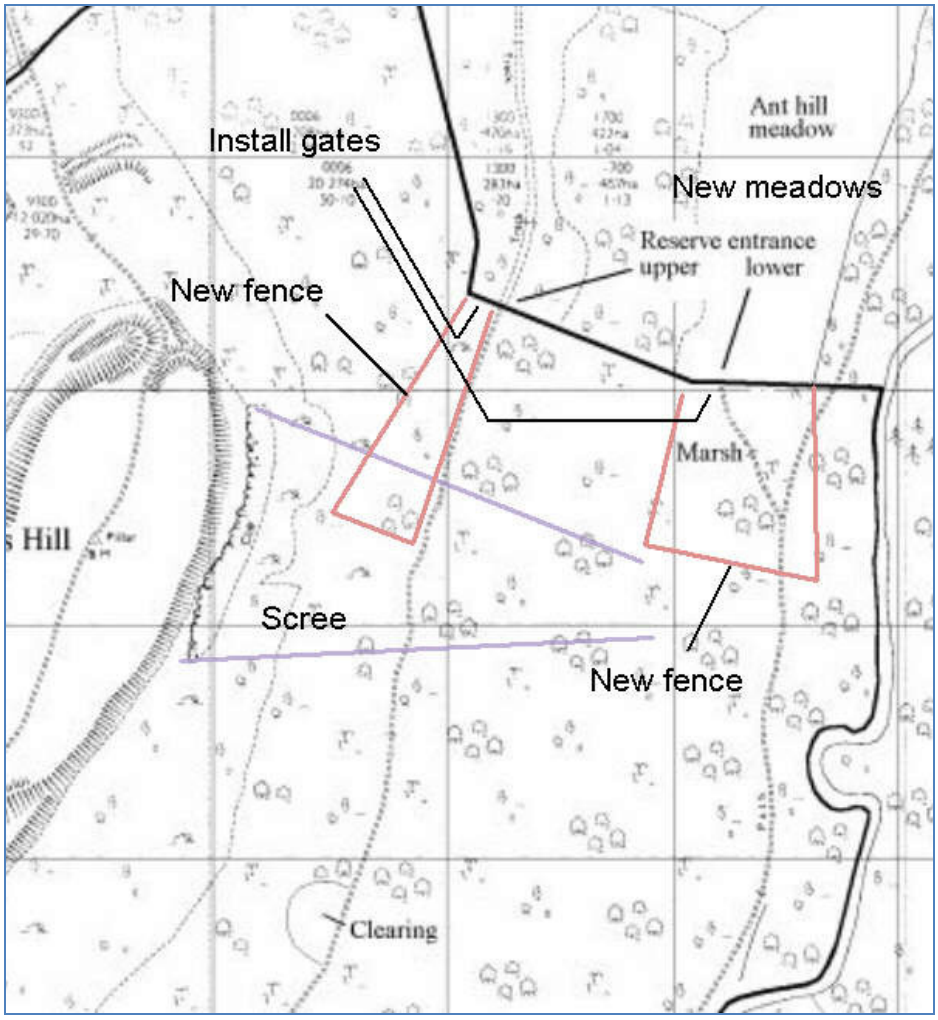
Figure 2: distribution of Mountain male-fern in Britain, showing Earl's Hill on the SE edge of its range.

Table 1: grassland axiophytes at Earl's Hill that could benefit from grassland restoration, and which could be used to measure the success of restoration.

Rhodobryum roseum	Rose-moss
Ophioglossum vulgatum	Adder's-tongue
Botrychium lunaria	Moonwort
Dryopteris oreades	Mountain Male Fern
Sedum forsterianum	Rock Stonecrop
Trifolium campestre	Hop Trefoil
T. micranthum	Slender Trefoil
T. striatum	Knotted Clover
Genista tinctoria	Dyer's Greenweed
Alchemilla filicaulis	Common Lady's-mantle
Aphanes australis	Slender Parsley-piert
Hypericum humifusum	Trailing St John's-wort
Geranium sanguineum	Bloody Crane's-bill
G. columbinum	Long-stalked Crane's-bill
Lepidium heterophyllum	Smith's Pepperwort
Teesdalia nudicaulis	Shepherd's Cress
Stellaria pallida	Lesser Chickweed
Moenchia erecta	Upright Chickweed
Dianthus deltoides	Maiden Pink
Montia fontana	Blinks
Sherardia arvensis	Field Madder
Myosotis ramosissima	Early Forget-me-not
M. discolor	Changing Forget-me-not
Cynoglossum officinale	Hound's-tongue
Veronica officinalis	Heath Speedwell
Betonica officinalis	Betony
Clinopodium vulgare	Wild Basil
Euphrasia officinalis	Eyebright
Orobanche rapum-genistae	Greater Broomrape
Jasione montana	Sheep's-bit
Carlina vulgaris	Carline Thistle
Hypochaeris glabra	Smooth Cat's-ear
Filago minima	Small Cudweed
Achillea ptarmica	Sneezewort
Valeriana dioica	Marsh Valerian
Succisa pratensis	Devil's-bit Scabious
Hydrocotyle vulgaris	Marsh Pennywort
Pimpinella saxifraga	Burnet-saxifrage
Silaum silaus	Pepper-saxifrage
Colchicum autumnale	Meadow Saffron
Carex muricata ssp. *pairae*	Prickly Sedge
C. panicea	Carnation Sedge
C. caryophyllea	Spring Sedge
C. nigra	Common Sedge
Briza media	Quaking-grass
Trisetum flavescens	Yellow Oat-grass
Deschampsia flexuosa	Wavy Hair-grass
Aira caryophyllea	Silver Hair-grass
A. praecox	Early Hair-grass
Agrostis canina	Velvet Bent
Danthonia decumbens	Heath-grass

Proposed Management

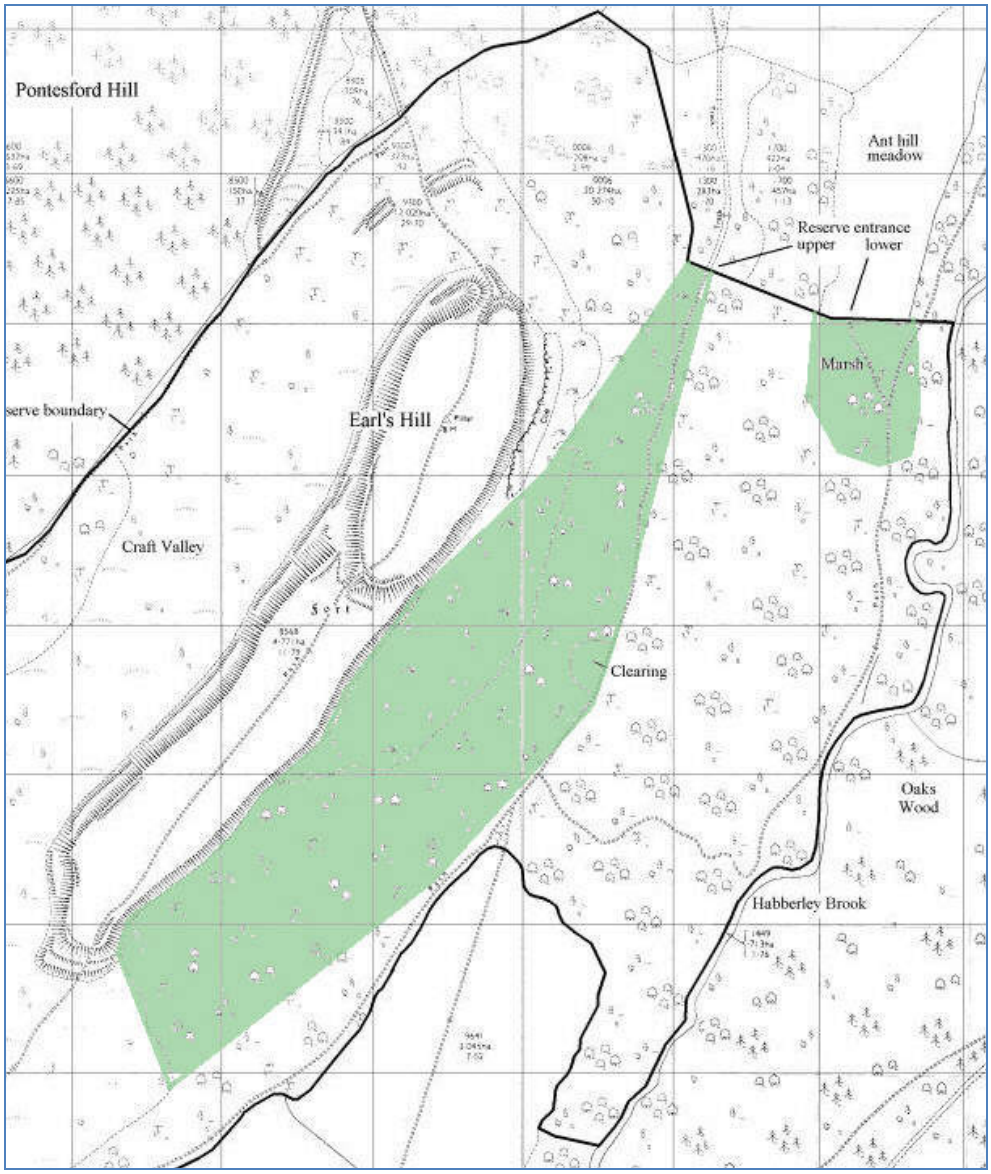
The proposal is to restore the grassland on the east side of Earl's Hill by connecting it to the newly acquired fields adjacent. The newly acquired fields are now quite agriculturally improved in places and are suffering from scrub invasion, so they also require sensitive management. The fences excluding livestock from the reserve will be removed and scrub within the reserve cut back to allow the grassland to regenerate, as shown on the plan below.



Stage 1 of the management proposals: install gates or remove fences at the reserve entrances marked. Erect new fencing inside the old part of the reserve and cut back the scrub within these areas. Encourage sheep grazing within these new areas by placing water troughs inside.

This management will be monitored by placing a few quadrats in the areas of scrub within the reserve and in the fields outside. Hopefully both sets of vegetation will improve over the next few years, becoming closer to MG5 *Cynosurus cristatus* grassland.

Once progress can be demonstrated, the aim is to extend the new grazing areas to encompass the entire area that was formerly grassland.

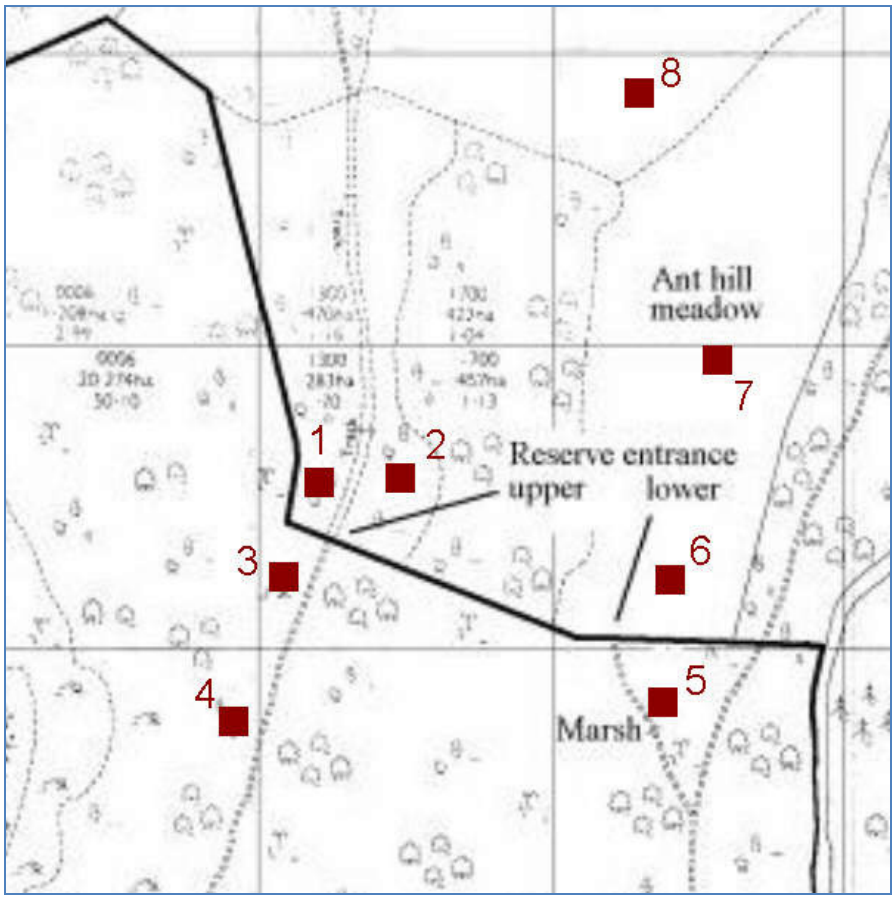


Stage 2: extend the grazing over the entire area that was formerly grassland. This will connect the meadows on the NE side of the hill to the acid grassland in the Craft Valley, giving a whole range of grassland types from *D. flexuosa* grassland through to MG5 and mire communities. It will also restore the upper part of scree vegetation. All the mature woodland will be protected, and there will still be plenty of room for scrub habitats.

Monitoring and predicted outcomes

We propose to monitor the outcomes of the management using photography and vegetation quadrats. The best measure of status in this type of grassland is the presence of anthills, which disappear rapidly under agricultural intensification or scrub. Our prediction is that anthills will signify MG5 grassland and all the associated species that go with it, many of which are listed as axiophytes on this site, but it is not possible to predict exactly which species will benefit in any one area. Success can be determined by closeness of fit of the quadrats to MG5 and by an increase in the number of axiophytes in the quadrats and generally in the grassland parcels concerned.

The scree is a slightly different situation. For the purposes of this exercise, we classify the scree as grassland although the species composition is not the same and it will not be MG5.



Monitoring: approximate locations of proposed quadrats. 1 & 2 are in high quality but neglected grassland in the new parts of reserve; 3 is in an areas of scrub that will be grazed in stage 1 of the restoration. 4 is in an area outside the new grazing regime (to act as a control). 5 is in the lower intervention area and 6 is outside the reserve in high quality grassland that will be unaffected (another unchanging control quadrat, hopefully). 7 & 8 are in fields that are currently agriculturally improved and which will hopefully benefit from the new management regime.

Shropshire Botanical Society Field Visits 2011 Penny Wysome

This year's eight visits have taken BotSoc members "Over hill, over dale, thorough bush and thorough briar", thorough park, over pale," only stopping short of "Thorough flood, thorough fire".
Although Shakespeare does mention a number of species in A Midsummer Night's Dream they do not really constitute biological records, and certainly do not encompass the range of plants found and identified in the sites visited. The inaugural meeting was well attended and 23 people enjoyed a pleasant walk along the River Onny, definitely a dale, led by Fiona Gomersall, Mark Duffell and John Handley. The combination of some botanical debutants and several experienced botanists from the committee, including Ian Trueman, turned this into a seminar at intervals, particularly when looking at the species in the unimproved grasslands. The river bank contained a lush mixed vegetation enhanced by the presence of *Lilium martagon,* Martagon Lily. Whether *Impatiens glandulifera*, Indian Balsam is an enhancement or a weed was a matter of some discussion.
Some intrepid plant hunters scrambled into the woods to find *Gymnocarpum dryopteris*, Oak Fern, but despite their best efforts *Paris quadrifolia,* Herb-Paris and *Orchis morio*, Green-winged Orchid remained elusive.

Quarries were the sites of the next two visits, June 4th saw Sarah Whild and Dan Wrench lead a sizable party scrambling into Lilleshall and Lea Quarries to compile a list of species and look for *Monotropa.hypopitys ssp. Hypopitys*, Yellow Bird's-nest. Evidence of flower heads from last year were found, but not current blooms. However there was compensation in the presence of *Filago vulgaris*, Common Cudweed in abundance and a real treat was to find *Euphoriai exigua,* Dwarf Spurge. Any stowaway zoologist would have been delighted to see large numbers of slow worms, some rather fine mullein moth caterpillars and a peregrine.

Patten's (Pattin's) Rock Quarry later in June saw a small but enthusiastic group again scrambling down a rock cliff, after a stroll through Benthall Woods led by Kate Thorne and Penny Wysome. The weather had threatened torrential rain but fortunately this stayed just a threat so nothing interrupted the species listing in the wood and the quarry. The wood yielded some interesting finds: one specimen of *Neottia nidus-avis*, Bird's –nest Orchid was located, *Hieracium cinderella* was present as was *Hordelymus europaeus*, Wood Barley. A protracted examination of a Helleborine with much use of magnification devices and Poland's Vegetative Key failed to decide if it was *Epipactis helleborine* or *Epipactis leptochichila*. That experienced botanists have to live with uncertainty sometimes is quite encouraging for those of us still feeling our way through the floras. The quarry contained good examples of limestone flora, including *Poa angustifolia*, Narrow-leaved Meadow-grass, and a fair number of *Platanthera chlorantha,* Greater Butterfly-orchids.

Stapeley Common provided hill and dale – or rather mire, for 15 botanists on July 2nd, another pleasant day weatherwise. John Clayfield and Fiona led their group along the grassy side of the hill down to the bog and then back over the summit to be rewarded with *Viola lutea,* Mountain Pansy as a final flourish. The bog had a good mixture of wetland and mire plants including *Narthecium ossifragum*, Bog Asphodel, *Triglochin palustre*, Marsh Arrowgrass, *Anagallis tenella*, Bog pimpernel and several sedges, notable *Carex hostiana* and the hybrid with *Carex demissa*, as well as *Carex paniculata*, Greater Tussock-sedge. John's enjoyment was slightly diminished by a failure to find Knotted Pearlwort (it was there the following week), and in not being able to persuade colleagues that an orchid was Northern Marsh.

Another hill – Oswestry Hillfort, was explored in July when Mark Duffell and Dan Wrench led a search for Greater Broomrape and Stag's Horn Clubmoss.

At the end of July, a damper site, Brown Moss, (especially during the shower at the end of the day) saw Sarah and her group of about a dozen members mapping rare and indicator species and collecting sedges for research at Edgehill. Goldengages provided by Sarah seem to have been an incentive for the work and some interesting plants were found, *Persicaria minor*, Small Water-pepper, *Alopecurus aequalis* , Orange Foxtail and *Rumex maritimus,* Golden Dock, being notable examples.

Botsoc members not risking life and limb on Titterstone Clee missed a wonderful day out in the company of Shropshire's outstanding botanists, led by John Bingham. A disappointingly small but very committed group scrambled among rocks in breezy conditions to be rewarded by finding real botanical treasures. The emphasis was on ferns. *Gymnocarpium dryopteris*, Oak Fern, *Phegopteris connectili,* Beech Fern, Criptogamma crispa, Parsley Fern, *Dryopteris oreades*, Mountain Male fern, – new record, were all found. *Wahlenbergia hederaceaea*, Ivy-leaved Bellflower, *Huperzia selag,* Fir Clubmoss and a yet to be confirmed *Carex viridula ssp Brachyrrhyncha*, Long-stalked Yellow-sedge just added to the haul, all obtained without recourse to the services of the Air Ambulance.

Our last visit for the season was to Telford. Serious tetrad bashing was undertaken by 7 botanists led by Ian Trueman and Penny Wysome. Extensive forays were made into the Town Park from Stirchley Grange initially, and then into some new housing estates and subsequently a section of Hollinswood. Although not conventionally regarded as a botanical beauty spot, the varied landscapes are interesting and pretty obviously man-made in terms of tree planting but the remnants of past use for extraction & industry with an agricultural landscape underneath provides a collage of different plant communities. Acid woodland with *Deschampsia flexuosa*, Wavy Hair-grass , is minutes away from a meadow enriched with *Dactylorhiza praetermissa*, Southern Marsh Orchid and *Odontites vernus*, Red Bartsia. The large pools provide habitat for *Scutellaria galericulata*, Skullcap and *Lycopus europaeus,* Gypsywort on the margins with the unexpected but welcome presence of *Blackstonia perfoliata* indicating a limestone residue. Over 160 species were recorded in the first square showing the different niches which must exist. There were plenty of the usual suspects found in lightly managed urban parkland: Willow Herbs, Thistles, Brambles, Hogweed and the like, but even here the Ragwort was not entirely conventional being largely *Senecio erucifolius*, Hoary Ragwort and *Buddleia davidii,* Butterfly-bush was noticeably absent. The strains of rock bands performing in the arena accompanied our wanderings, not quite like some of our other venues this year.

I would like to thank all the leaders and organisers for arranging such a varied and enjoyable series of events. We would very much like some feedback from members about this year's visits with perhaps some suggestions of places of interest or plant groups which people would like to investigate next year. Letters or e-mails to committee members would be welcome. For this season " Our revels now are ended".

Membership is **£10 a year or £20 for three years** and is due for renewal on January 1st of the year shown. Please send cheques payable to' Shropshire Botanical Society', to Mark Duffell, 19 Compton Mews, Ford, Shrewsbury, SY5 9NX. If your name is in bold this draws attention to the fact that your renewal is now overdue.

Andrew Allott, Shrewsbury	2013	Stephen Lewis, Pontesbury	2013
Mia Armstrong, Bridgnorth	2012	Susan Lewis, near Ellesmere	2013
Audrey Ashwell, Craven Arms	2014	Carol & Keith Little, Shrewsbury	2013
Mike Baskeyfield, Newcastle	2014	Alex Lockton, Shrewsbury	2013
Danny Beath, Shrewsbury	2012	Margaret Markland, Shrewsbury	2014
Keith Bell, Shrewsbury	2013	Frances McCullagh, Wolverhampton	2012
Frank Bentley, Shrewsbury	2014	Rachel Meade, Powys	2014
John & Denise Bingham, Kidderminster	2012	Rob Mileto, Shrewsbury	2014
Peter Boardman, Shrewsbury	2013	Chris Mitchell, Shrewsbury	2013
Ian Bonner, Gwynned	(hon.)	Jane Morris, Shrewsbury	2013
Pam Bowen, Ellesmere	2014	Rose Murphy, Camborne	(hon.)
Shirley Burton, Nantwich	2012	Nick Musgrove, Wolverhampton	2014
Arthur Chater, Aberystwyth	2014	Patricia Noble, Newport	2012
John Clayfield, Clunton	2014	Steve & Elise O'Donnell, Albrighton	2013
Philip Cornish, Shrewsbury	2014	Philip Oswald, Cambridge	(life)
Mags Cousins, All Stretton	2014	John Packham, Bridgnorth	(life)
Helen Critchley, Pontesbury	2013	Pat Parker, Baschurch	2012
Hugh Cutler, Shrewsbury	2012	David Pearman, Truro	(hon.)
Elizabeth Dale, Shrewsbury	2013	Tess Pearson, Bishops Castle	2014
Ruth Dawes, Trefonen	2014	Jan Pursaill, Shrewsbury	2013
Anne Dickinson-Flint, Shrewsbury	2013	Matthew Race, Birmingham	2014
Mark Duffell, Shrewsbury	2014	Juliet Ramsbottom, Machynlleth	2014
Glenys Evans, Llanfyllin	2014	Paul Reade, Kinver	2013
Chris Fleming, Craven Arms	2014	Tim Rich, Cardiff	(hon.)
Rosa Ford, Whitchurch	2014	Rob Rowe, Craven Arms	2014
Angela Fricker, Shrewsbury	2013	Anne Shaw, Edgmond	2014
Peter Gateley, Lancashire	2014	David Smith, Telford	2013
Rosalind Gillard, Bishops Castle	2013	Sandra Spence, Craven Arms	2014
Damian Glynn, Shrewsbury	2014	Clive Stace, Ullesthorpe	(hon.)
Martin Godfrey, Stafford	2012	Sarah Stafford, Leominster	(life)
Fiona Gomersall, Lydbury North	2013	Anne Stephens, Montgomery	2014
Amelia Grant, Coalbrookdale	2013	Rob Stokes, Shrewsbury	2014
Pam Green, Ratlinghope	2013	Janet Stone, Shrewsbury	2016
Llew Guest, Shrewsbury	2012	Sue Swindells, Oswestry	2013
Ann Hadfield, Ludlow	2014	Ian Thompson, Shrewsbury	2013
Lalage Hampson, Shrewsbury	2013	Jo Thompson, Shrewsbury	2013
John Handley, Shropshire	2014	Kate Thorne, Church Pulverbatch	2013
Annie Hazelhurst, Oswestry	2013	Rosemary Thornes, Shrewsbury	2014
Melanie Heath, Shropshire	2012	Mary Thornton, Oswestry	2013
Brian Herring, Telford	2012	Sue Townsend, Montford Bridge	2013
Pirkko Higson, Oswestry	2014	Ian Trueman, Wolverhampton	(life)
Hilary Hillier, Bromyard	2013	Jenny Vanderhook, Cleobury Mortimer	2014
Maurice Hoare, Montford Bridge	2013	Chris Walker, Condover	(life)
Hugh Hughes, Albrighton	2012	Tom Wall, Lydbury North	2012
Rachel Hunter, Macclesfield	2014	Hilary Wallace, Hereford	2012
Jane Ing, Baschurch	2014	Julia Walling, Ludlow	2013
Bill Kavanagh, Newcastle-under-Lyme	2013	Neville Walters, Stoke on Trent	2014
Nadia Kingsley, Bridgnorth	2012	Sarah Whild, Shrewsbury	2013
Mark & Claire Kitchen, Berkeley	2013	Gillian Wilson, Pontesbury	2013
Ray Knowles, Shrewsbury	2013	Dan Wrench, Shrewsbury	2013
James Lawson, Pontesbury	2014	Penny Wysome, Wellington	2013
John & Marjorie Leonard, Craven Arms	2014		